



Which Door Control?

Meeting the requirements of the Equality Act & Fire regulations

dormakaba 

Introduction

There are two main considerations in specifying door controls:

- Does it meet the requirements of the Equality Act 2010?
- If applied to a fire door - does it satisfy the fire regulations?

This brochure will help you select the correct door control for your application.



Equality Act 2010



The Equality Act places a duty upon service providers to remove the physical barriers that prevent people with disabilities from accessing a service. The Special Education Needs & Disability Act (SENDA) details this requirement for schools and educational institutions.

The specific performance of door closers in meeting this requirement is detailed within the Building Regulations: BS8300: 2018 and Approved Document M (ADM) in England and Wales, Section 3 in Scotland and Part R

in Northern Ireland. These state that:

"...a door closer must produce an opening force of below 30N between 0° and 30° degrees and below 22.5N between 30° and 60° degrees..."

Not all door closers available in the market can meet the criteria, dormakaba door closers carry third party test evidence to demonstrate their ability to produce low opening forces and help doorsets meet the requirements of BS8300 and ADM*.

All Door Closers

for the BS8300/ADM* Applications must be power adjustable by spring and conform to BSEN1154

Whilst BS8300 and ADM* state maximum opening force requirements in respect of the door closer, the complete doorset must be compliant with this opening force. A Torque Curve shows the opening and closing forces throughout the opening and closing cycle in Nm from initial opening through and beyond 60° of opening. They allow calculation of tolerances the door closer will allow for resistance from other fitted items, such as door seals and hinges, and site conditions. All the dormakaba closers detailed in this guide have been third party tested using pivots as detailed in BS EN 1154 (maximum resistance 0.4Nm).

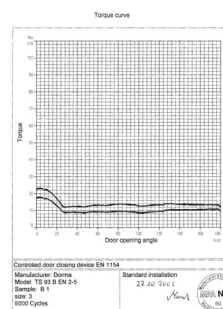
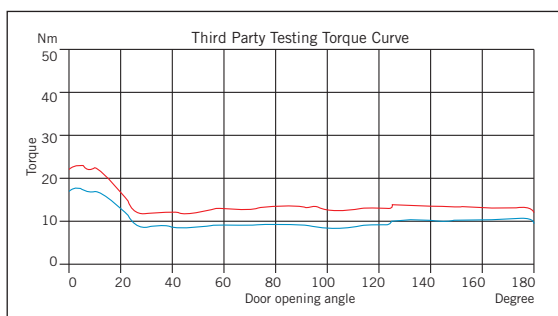
however no such standard currently exists for door seals. Contact manufacturers directly for information on the resistance of their ironmongery.

High quality accompanying ironmongery such as hinges, latches and intumescent seals should be selected in order to keep the resistance added to the door set to a minimum. BS EN 1935 details the maximum allowable resistance provided by hinges,

This torque graph shows the results from an independent test for the TS93 cam action closer, demonstrating how the opening force at 0° to 30° degrees of the door opening angle starts at less than 30N and rapidly falls away to less than 22.5N for the remainder of the opening cycle.

This measurement was taken at power setting EN 3, the minimum requirement for fire doors as detailed in BS EN 1154. For non-fire resisting doors the closer can be set to a lower power setting and therefore the opening forces will be even lower.

*Section 3 in Scotland, Part R in Northern Ireland
Original graph provided by MPA



Fire Regulations



BS EN 1154 Controlled Door Closing Devices

This gives the minimum performance levels for door closing devices, in relation to door width and mass. It also classifies closers for general suitability for use on fire doors, safety in use, and corrosion resistance. Closers must complete 500,000 opening and closing cycles without loss of performance or significant wear. The standard requires that closers fitted to fire doors be no less than size EN 3. Adjustable closers must be able to achieve

this as a minimum. All dormakaba Door Closers are CE Marked to BS EN1154.

Building Regulations

Approved Document B in England and Wales, (Section 2 in Scotland and Part S in Northern Ireland) requires Third Party Fire Test Certification (such as CERTIFIRE). All dormakaba door closers, locks and panic hardware have been fire tested and approved by CERTIFIRE to ensure that they are fit for purpose.

Door closers and third party fire testing



CERTIFIRE is a third party certification

authority originally set up by Warrington Fire Research and BSI.

It specialises in certification for a wide range of passive fire protection products which includes fire doors and their hardware.

To gain CERTIFIRE approval for use on a fire door:

- Items of door hardware must have been included in successful fire door tests
- They must be independently tested against the relevant BS EN or BS, to ensure their durability and safety
- They must be manufactured on quality assured production lines registered under an ISO 9000 regime

These three requirements give confidence to specifiers, regulating authorities and purchasers, that all relevant aspects of the product have been assessed.

Details

CERTIFIRE approval does not give carte blanche for the use of an item of hardware on any fire door. Check the following:

CF No. Certificate number issued by CERTIFIRE

ITT120 Suitable for timber fire doors

MM240 Suitable for uninsulated metal doors

IMM240 Suitable for insulated metal doors

The number indicates that some items may be suitable for doors up to 120 mins fire resistance, whereas others may be suitable for up to 240 mins.

Check Certificates

dormakaba is always willing to supply copies of certificates relating to their products. Certificates give details of any extra intumescent protection required in the locality of some mortised items. dormakaba supplies such extra protection as ready cut gasket packs for those products which require them.

BS EN 1155 Electrically powered hold open devices for swing doors. Covers both electro-magnetic devices incorporated into door closers, and hold open magnets. To comply, the devices must be capable of both manual and electric release. Any door closing element must comply with BS EN 1154 - controlled door closing devices.

Since July 2013, it became law for all product that falls under the Harmonised EN standard to be CE Marked before it can be made available on the Market and a Declaration of Performance, (DoP), must be produced. If a DoP certificate cannot be produced then the CE Mark becomes invalid. All DoP's for dormakaba CE marked products can be found on our website.

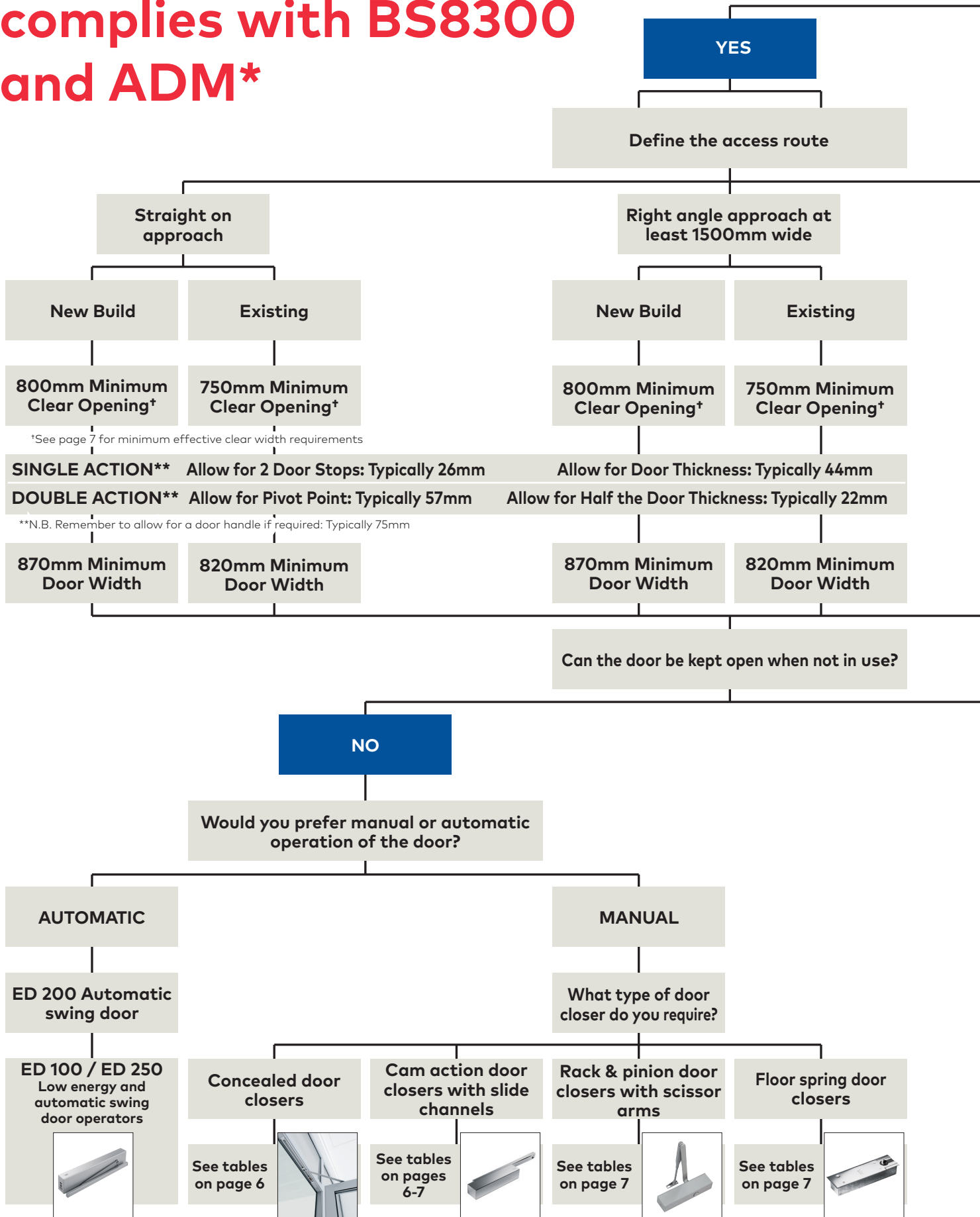
The Fire Safety Order (FSO) 2005

With the introduction of the FSO, the Fire Certificate was abolished, leaving the risk assessment and proof of compliance in the hands of the building owner or other reasonable person. Instead of inspecting premises and issuing certificates, the Fire Service now performs spot checks to ensure compliance with the regulations. Failure to comply could result in a fine or imprisonment

(or both) and would invalidate any building insurance.

The risk assessment includes checking all fire doors and emergency exit doors to see if they meet the requirements of the new FSO. Please contact dormakaba for assistance in carrying out the risk assessment.

How to select a door closer that complies with BS8300 and ADM*



Is the door you require a Fire Door?

NO

**NON-FIRE RESISTING DOORS
REQUIRED TO SELF-CLOSE**

There is no legal requirement for a minimum closing force for door closers on non-fire doors so they can be adjusted below size EN3 to make the opening forces as low as possible.

However the closer should be able to successfully close the door and must not exceed the opening force limits set out in BS8300/ADM*

*Section 3 in Scotland, Part R in Northern Ireland

Right angle approach at least 1200-1499mm wide

New Build

Existing

825mm Minimum Clear Opening†

775mm Minimum Clear Opening†

SINGLE ACTION** Allow for 2 Door Stops: Typically 26mm

Allow for Door Thickness: Typically 44mm

DOUBLE ACTION** Allow for Pivot Point: Typically 57mm

Allow for Half the Door Thickness: Typically 22mm

**N.B. Remember to allow for a door handle if required: Typically 75mm

895mm Minimum Door Width

845mm Minimum Door Width

YES

Decide which type of door closer you require and select either HOLD OPEN or FREE SWING

Concealed door closers

Cam action door closers with slide channels

Rack & pinion door closers with scissor arms

Floor spring door closers

HOLD OPEN**
RTS 80 EMB



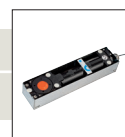
HOLD OPEN**
TS 93 EMF
TS 92 EMF
TS 91 EMF



HOLD OPEN**
TS 73 EMF

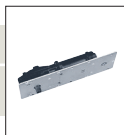


HOLD OPEN**
BTS 80 EMB



**Alternatively use EM magnets with any dormakaba product within the chosen door type

FREE SWING
RTS 80 FLB



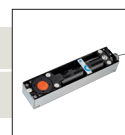
FREE SWING
TS 97 FL



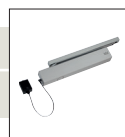
FREE SWING
TS 73 EMF



FREE SWING
BTS 80 FLB



FREE SWING
TS 99 FL***




***Not cam action

Door Closers for Fire Doors

Door closers on fire doors must be set at a minimum power size of EN3. Under BS EN 1154, size EN3 closers are recommended for use on doors up to 950mm wide. For more information on door closer power settings on other door sizes see page 8. All dormakaba door closers have been third party tested using pivots as detailed in BS EN 1154 (maximum resistance 0.4Nm).

Adjustable Door Closers

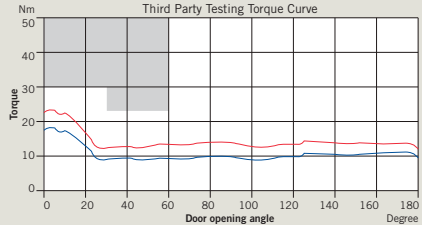
Cam Action Door Closers



Product TS93 **Size** EN2-5


Typical Door Sizes (mm)				
826	850	875	900	926
█	█	█	█	█

Minimum achievable door width at EN3 = 767mm
DoP Certificate No. 0001



Third Party Testing Torque Curve

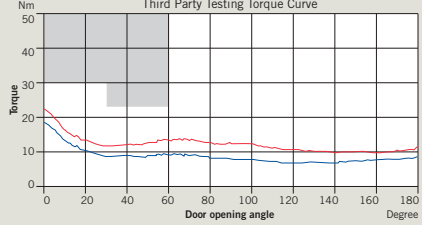
The graph shows Torque (Nm) on the y-axis (0 to 50) and Door opening angle (Degree) on the x-axis (0 to 180). A shaded grey area indicates the required torque range for EN2-5, which is approximately 25-45 Nm between 20 and 60 degrees. The red curve (top) starts at ~25 Nm at 0 degrees and drops to ~10 Nm at 20 degrees, remaining stable thereafter. The blue curve (bottom) starts at ~15 Nm at 0 degrees and drops to ~10 Nm at 20 degrees, remaining stable thereafter.



Product TS92 **Size** EN1-4


Typical Door Sizes (mm)				
826	850	875	900	926
█	█	█	█	█

Minimum achievable door width at EN3 = 733mm
DoP Certificate No. 0016



Third Party Testing Torque Curve

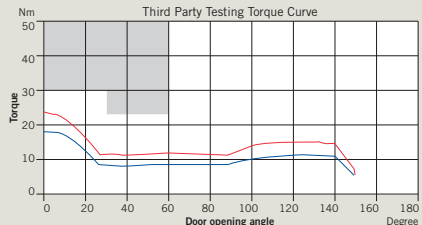
The graph shows Torque (Nm) on the y-axis (0 to 50) and Door opening angle (Degree) on the x-axis (0 to 180). A shaded grey area indicates the required torque range for EN1-4, which is approximately 25-45 Nm between 20 and 60 degrees. The red curve (top) starts at ~25 Nm at 0 degrees and drops to ~10 Nm at 20 degrees, remaining stable thereafter. The blue curve (bottom) starts at ~15 Nm at 0 degrees and drops to ~10 Nm at 20 degrees, remaining stable thereafter.



Product TS97 **Size** EN2-4

Typical Door Sizes (mm)				
826	850	875	900	926
█	█	█	█	█

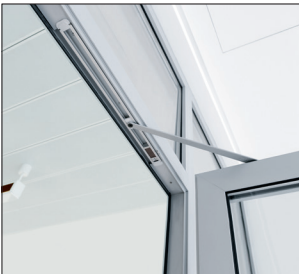
Minimum achievable door width at EN3 = 783mm
DoP Certificate No. 0003



Third Party Testing Torque Curve

The graph shows Torque (Nm) on the y-axis (0 to 50) and Door opening angle (Degree) on the x-axis (0 to 180). A shaded grey area indicates the required torque range for EN2-4, which is approximately 25-45 Nm between 20 and 60 degrees. The red curve (top) starts at ~25 Nm at 0 degrees, drops to ~10 Nm at 20 degrees, and then rises to ~15 Nm between 100 and 140 degrees. The blue curve (bottom) starts at ~15 Nm at 0 degrees, drops to ~10 Nm at 20 degrees, and remains stable thereafter.

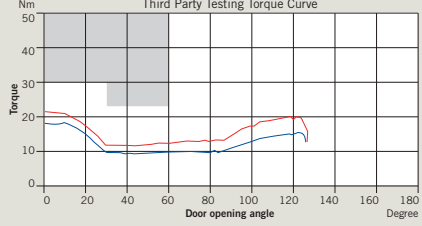
Concealed Door Closers



Product ITS96 **Size** EN2-4


Typical Door Sizes (mm)				
826	850	875	900	926
█	█	█	█	█

Minimum achievable door width at EN3 = 733mm
DoP Certificate No. 0051



Third Party Testing Torque Curve

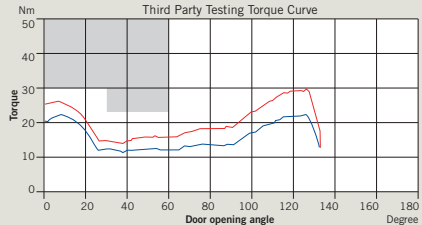
The graph shows Torque (Nm) on the y-axis (0 to 50) and Door opening angle (Degree) on the x-axis (0 to 180). A shaded grey area indicates the required torque range for EN2-4, which is approximately 25-45 Nm between 20 and 60 degrees. The red curve (top) starts at ~25 Nm at 0 degrees, drops to ~10 Nm at 20 degrees, and then rises to ~20 Nm between 100 and 140 degrees. The blue curve (bottom) starts at ~15 Nm at 0 degrees, drops to ~10 Nm at 20 degrees, and remains stable thereafter.



Product ITS96 **Size** EN3-6

Typical Door Sizes (mm)				
826	850	875	900	926
		█	█	█

Minimum achievable door width at EN3 = 867mm
DoP Certificate No. 0052




Third Party Testing Torque Curve

The graph shows Torque (Nm) on the y-axis (0 to 50) and Door opening angle (Degree) on the x-axis (0 to 180). A shaded grey area indicates the required torque range for EN3-6, which is approximately 25-45 Nm between 20 and 60 degrees. The red curve (top) starts at ~25 Nm at 0 degrees, drops to ~10 Nm at 20 degrees, and then rises to ~30 Nm between 100 and 140 degrees. The blue curve (bottom) starts at ~15 Nm at 0 degrees, drops to ~10 Nm at 20 degrees, and remains stable thereafter.

Key

- Opening force
- Closing force
- Compliance with opening force requirements
- Non-compliant
- Complies at this size

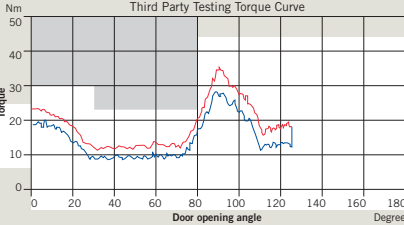
Transom Closers




Product RTS87 **Size** EN1-4

Typical Door Sizes (mm)				
826	850	875	900	926

Minimum achievable door width at EN3 = 800mm
DoP Certificate No. 0033



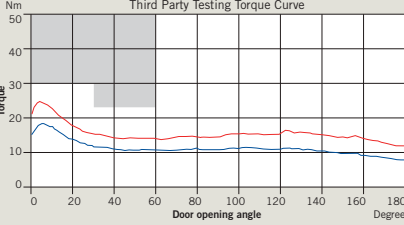
Rack & Pinion Door Closers




Product TS83 **Size** EN2-5

Typical Door Sizes (mm)				
826	850	875	900	926

Minimum achievable door width at EN3 = 833mm
DoP Certificate No. 0006

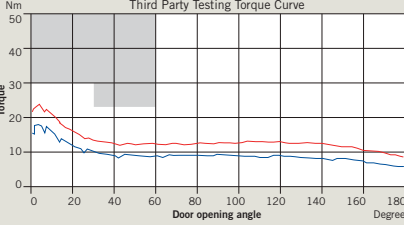





Product TS73V **Size** EN2-4

Typical Door Sizes (mm)				
826	850	875	900	926

Minimum achievable door width at EN3 = 792mm
DoP Certificate No. 0004

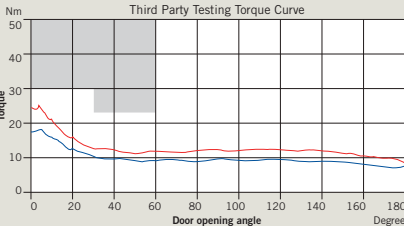





Product TS72V/TS72VBC **Size** EN2-4

Typical Door Sizes (mm)				
826	850	875	900	926

Minimum achievable door width at EN3 = 833mm
DoP Certificate No. 0010



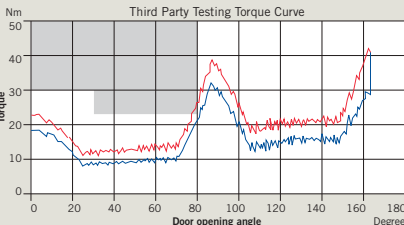
Floor Spring



Product BTS75V **Size** EN1-4

Typical Door Sizes (mm)				
826	850	875	900	926

Minimum achievable door width at EN3 = 767mm
DoP Certificate No. 0034



Door Closer Power Settings

Under BS EN1154 door closer power sizes are recommended as follows in respect of door width. However any fire door must be fitted with a closer size EN3 minimum, irrespective of width.

BS EN1154	Door Sizes mm
EN1	750 & below
EN2	750-850
EN3	850-950
EN4	950-1100
EN5	1100-1250
EN6	1250-1400

For further information on the regulations regarding fire doors please see page 3.

BS8300/ADM*

Effective Clear Widths Through Doorways

Note: The effective clear width is the width of the opening measured at right angles to the wall in which the door width is situated from the outside of the door stop on the door closing side to any obstruction on the hinge side, whether this be projecting door opening furniture, a weather board, the door or the door stop.

Please note that for the purposes of this brochure an 826mm door width has been used as the starting point in order to achieve BS8300/ADM* compliant clear openings, however some dormakaba closers can achieve the required opening forces on smaller door widths as detailed above. For more information contact us.

Under Approved Document M, doors will satisfy the requirements if they have the following minimum clear openings:

Minimum effective clear widths of doors

Direction and width of approach	New Buildings (mm)	Existing Buildings (mm)
Straight-on (without a turn or oblique approach)	800	750
At right angles from an access route at least 1500mm wide	800	750
At right angles from an access route at least 1200mm wide	825	775
At right angles from an access route at least 900mm wide	N/A	800
External doors and internal lobby doors at the entrance of buildings used by the general public	1000	775

*Section 3 in Scotland, Part R in Northern Ireland

External Doors

ADM* states that "a non-powered manually operated entrance door, fitted with a self-closing device capable of closing the door against wind forces and the resistance of draught seals, is unlikely to be openable by many people, particularly those who are wheelchair users or who have limited strength".

Indeed ADM* goes on to state "a powered door opening and closing system, either manually controlled or automatically operated by sensors, is the most satisfactory solution for most people. An automatic sliding door arrangement is particularly beneficial ... and its use can make it possible to reduce the length of any entrance lobby."

Provided one of the entrance doors is fully accessible and automatically operated, then the remaining doors can utilise manual door closers set at a suitable spring strength to ensure closure of the door.

dormakaba can provide both manual and automatic solutions for external doors.



Automatic Doors

dormakaba offers a full supply and installation package for automatic doors. All installations are completed to the highest safety standards as recommended under EN 16005. For further information on the specification of automatic doors please ask for our Automatics Brochure or to see one of our Project Consultants.

When selecting an automatic door there are five main types to choose from:



Sliding Doors

- ES 200 range
- BST curved doors
- Preferred solution as recommended by ADM



Folding Doors

- FFT Flex Green
- Ideal where space is restricted



Swing Doors

- ED 100/250 A
- Ideal for retro-fit or new build



Revolving Doors

- Can act as an airlock keeping out draughts, noise and dirt
- Manual, positional, servo-assist or fully automatic operation
- If a revolving door is used, an ADM compliant entrance door should be provided immediately adjacent and signed to show that it is accessible



Low Energy Swing Doors

- ED 100/250 LE
- Ideal for retro-fit or new build
- Activated by push pad or remote control

*Section 3 in Scotland, Part R in Northern Ireland

Frequently Asked Questions

1. In BS8300 it states that the door closer should be of a variable power type. Can a fixed size door closer be used on fire doors?

In general a fixed powered closer with a typical efficiency of 60-65% (BS EN1154 requires a minimum of 55% at EN3) would be unlikely to comply with the 30N opening force. Similarly, door closers with power adjustable only by template (selectable power) are not recommended. However, very high efficiency fixed power closers such as the TS91 Cam Action Closer can comply with the required opening forces on certain door widths. A variable power closer however is a more flexible solution as it allows for on-site adjustment to site conditions and can be adjusted to ensure minimal opening force.



2. BS8300 states that "in general" fire doors should be of a width greater than 900mm. Why have dormakaba offered solutions at lower widths?

We have based the solutions on the minimum requirements of BS8300/ADM*, starting with a typical 826mm wide door and have then gone up in approximately 25mm increments.

A number of dormakaba high efficient door closers are capable of coping with doors at these and smaller sizes.

3. BS8300 refers to electrically powered hold open devices. Which suitable products are available from dormakaba?

dormakaba offer the following electrically powered hold open door closers: ITS96 EMF, TS93 EMF, TS92 EMF, TS91 EMF and TS73 EMF. We also offer the BTS80 EMB floor spring (see above photo) and the RTS 80 EMB hold open double action transom closer.

Alternatively any dormakaba door closer can be used in conjunction with independent hold open magnets (EM). When using electrically powered hold open devices the door closing device is not required to comply with the opening force of less than 30N (when the electrical supply has been cut through activation of the alarm or power failure). However certain buildings may benefit from having electromagnetic devices that, when the power is removed, they still comply with the 30N maximum opening force. Here the use of Cam Action EMF Door Closers, or Cam Action Door Closers used with EM magnets will provide opening forces of 30N or less when fitted at size EN3 on door widths as detailed earlier.



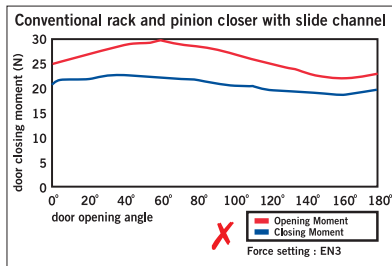
4. BS8300 refers to "swing free" controlled door closing devices. Which suitable products are available from dormakaba?

"Swing free" door closers operate without the resistance of a door closer; the closer is only activated in the event of a fire or power failure making them most suitable for door access to individual rooms rather than part of a circulation route. dormakaba offer: TS99 FL and TS73 EMF Free Swing option, RTS80 FLB and BTS80 FLB floor spring.

5. BS8300 talks about lower power sizes for non-fire resisting doors in comparison to fire doors using a door closer. What if a higher power size is required?

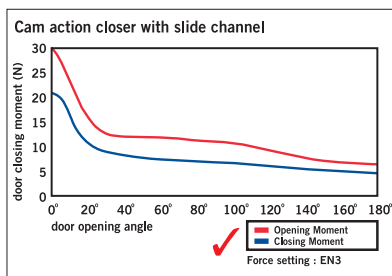
As there is no legal requirement for a minimum closing force on non-fire doors the door closer can be adjusted below size EN3 (18Nm, as required for fire doors). However the door closer should always be adjusted to successfully close the door. If this increases the force to exceed BS8300/ADM* requirements, for example to overcome heavy duty seals on an acoustic door, dormakaba can supply a supplement to an access statement detailing the measures taken to ensure opening forces have been kept to a minimum.

*Section 3 in Scotland, Part R in Northern Ireland



6. BS8300 mentions avoiding door closers where the maximum closing force is not between 0-15 degrees. What type of closers exhibit these properties?

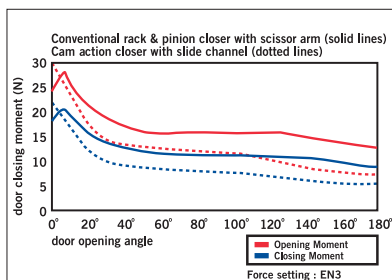
If a rack and pinion type closer is used in conjunction with a slide arm and channel, any user will experience an increase in opening resistance throughout the opening cycle and thus be denied ease of access.



dormakaba's unique cam action closer combined with a slide arm and channel do not experience an increase in the opening resistance but a rapid fall in

opening resistance on operation of the door.

As opening and closing forces are directly proportional, Cam Action closers exert their maximum closing force between 0-15 degrees of final closure as required in the guidance to ensure the correct latching action.



7. Why should Cam Action closers be preferred over standard rack and pinion closers?

Cam Action closers provide greater benefit to any user when operating a

door fitted with a closing device. BS8300 and ADM* requires the opening resistance to drop to 22.5N by 30 degrees, and although Rack and Pinion mechanisms with scissor arms can achieve this, a Cam Action mechanism achieves it far easier and much more quickly, resulting in easier access for all.

8. Can full opening of the door be achieved when using the backcheck facility?

BS8300 details minimal resistance on a door when opened slowly. However this is only possible when using door closers with 'thinking backcheck'. With 'thinking backcheck' as opposed to 'fixed or standard backcheck', the backcheck facility only engages fully when the door is



opened with great force or speed, if the door is opened slowly then the backcheck will not engage. All dormakaba overhead door closers with backcheck facility have 'thinking backcheck'.

9. How important is regular maintenance?

BS8300 notes that without regular maintenance of all door fittings, the resistances to opening and closing can increase to an extent that the ability of disabled people to pass through the door can be affected therefore building owners and users must check doors regularly to ensure they meet the opening force requirements.

Independent studies by PSA Research showed that where doors and ironmongery represent as little as 1% of a building's cost, they can account for 80% of the total maintenance bill in use. dormakaba Service division offer a full maintenance package for manual, automatic and industrial doors. Please contact us for further details on 0800 212 380.



Our products



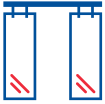
Mechanical Key Systems

Systems that enable access rights and key control to all rooms within the premises



Door Hardware

Solutions for residential or commercial projects



Interior Glass Systems

System solutions made from glass for a wide range of everyday and office applications



Entrance Systems

Automated access solutions for convenient access to buildings



Lodging Systems

Hotel locks and locking systems as well as access management solutions for holiday homes



Safe Locks

Security locks for preventing unauthorized access to goods, valuables, information or hazardous substances



Electronic Access & Data

Electronic access control and workforce management for efficient access management, security and data collection



Services

Tailor-made services and customized maintenance for long-term functional integrity of access and security solutions

09/2017

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